REMARKS

I. Answers to Questions on Page 2 of the final Office Action

Figure 1 shows the prior art device for obtaining the prediction signal and figure 3 shows an additional device (time recursive interpolation filter, page 9, line 2, applicants' specification) that is added to the prior art device of figure 1 to obtain an improved prediction signal (page 8, lines 15 to 20, of the U.S. specification). The output signal from the TRI filter of figure 3 is $s'_u(t-1)$ and is thus the improved prediction signal according to the present invention (see last two lines of claim 9). The input signals to the TRI filter originate from the device shown in fig. 1 and are the reference image s'(t-1) and the motion vector at t - 1 multiplied by L .

The output of the motion estimation unit ME is not both d(t) and L*d(t - 1). It is only d(t), the motion vector d(t), obtained with the prior art device shown in fig. 1. L is the factor by which the scan rate is multiplied when the intermediate picture $s_e(t-1)$ is produced by the expander 1 in fig. 3 from the reference picture s'(t-1). Prior to input of the motion vector at t - 1, d(t - 1), (which is already determined if d(t) is known) is multiplied by L since the scan rate has been multiplied by this factor.

Claims 8 and 10 have been amended to make these relationships clearer.

Confusion might result from combination of fig. 3 with fig. 1 with the reference characters for the respective signals because the signals in the two

figures are obtained at different times. The signal s' (t - 1) that is processed in fig. 3 is obtained at an earlier time from the device shown in fig. 1.

II. Indefiniteness Rejection

Claims 8 and 10 were rejected as indefinite under 35 U.S.C. 112, second paragraph.

Claims 8 and 10 have been amended to further clarify the claimed invention.

One of the main features of the invention is clearly expressed in the first two lines of the claims: the motion-compensated predication takes place using an interpolation method that considers past image points as well as neighboring image points. Process claim 8 includes steps such as step a) which include past image point information in the motion-compensated picture signal and dependent process claim 9 defines a spatial interpolation at marker values where no image information is available in the motion-compensated picture signal obtained by the steps of claim 8.

Claims 8 and 10 have been amended to make their wording clearer. The motion compensation of the past image point information is performed according to a product of the scan rate increase factor and the previously determined motion vector at t - 1. The wording of step a) has been amended to clarify this aspect of the manner in which the motion-compensated picture signal is obtained. This feature of the invention is explained on page 9, line 19, to page 10, line 2.

The merging or replacement operation in step c) has also been clarified by adding wording to state that the values at the remaining locations where image point information of the motion-compensated picture signal is not available from the motion compensation means 4 remain the same as in the intermediate picture $S_e(t - 1)$. These aspects of the method are described in the specification at page 10, lines 2 to 19.

With respect to the comments on page 3 of the Office Action the intermediate picture $s_e (t - 1)$ is not the same as the motion-compensated picture signal. It is the marker values m in the intermediate picture $s_e (t - 1)$ that are replaced by available scanned values from the motion-compensated picture signal. This is clearly shown in applicants' fig. 5 and described in the specification in the same language as in the method claim 8.

In addition it should be noted that the arrays shown in fig. 5 show points distributed over the plane of a picture and that "location" in step c) of claim 8 means a position on the picture plane (which could be described by an X and Y position coordinate). The time is defined by the values in parentheses, e.g. t - 1, t - 2, etc. The intermediate picture at t - 1 is derived by inserting marker values m between the image values in reference picture at t - 1 in order to "expand" the data in the intermediate picture, which corresponds to increasing the scan rate for taking pictures (by a factor of L). The point is that the picture that is merged with the intermediate picture is a "modified" picture from t - 2 by means of the motion compensation, i.e. a picture derived from a picture further in the past, than the intermediate picture – it is not the same as a corresponding picture at t

- 1 because the pictures are "moving".

Claim 8 clearly and definitely defines the steps of applicants' method of motion-compensated prediction of moving images or pictures, which are novel and inventive steps. Relative terms or other vague terms are not used and the method corresponds to the description in the specification. Antecedent basis is maintained.

For the foregoing reasons withdrawal of the rejection of the amended claims 8 and 10 under 35 U.S.C. 112, 2nd paragraph, is respectfully requested.

In addition two new process claims 13 and 14 have been added. The order of two of the process steps has been reversed. Perhaps the new process claim 13 with its new step order is somewhat more logical in its presentation, but it is essentially the same as claim 8. Also new dependent method claim 14 corresponds to claim 9, but includes additional details of the spatial interpolation.

It is respectfully submitted that the new process claims 13 and 14 should not be rejected under 35 U.S.C. 112, second paragraph, as indefinite.

III. Enablement Rejection

Claims 8 to 12 were rejected under 35 U.S.C. 112, first paragraph, for lack of an enabling description regarding how to make and/use the claimed device and how to perform the claimed method.

Claim 8 claims the inventive and unobvious features of applicants' method of motion-compensated prediction of moving images. The steps involved in producing the motion vector d(t) and the reference picture s'(t - 1) are well known

in the prior art, as shown in fig. 1 and described in the various references cited in the background section of the specification. As stated above, the motion vector d(t) and reference picture s'(t - 1) are the input variables for the TRI filter shown in fig. 3. The output variable for the applicants' inventive process is the resulting interpolated picture signal $s'_u(t - 1)$ -- as shown in fig. 3.

It is well established that features of a device or method that are well known in the prior art are better omitted from the disclosure of a patent specification. For example, the Federal Circuit Court of Appeals has said: "A patent need not teach, and preferably omits, what is well known in the art". ***Hybritech Inc. v. Monoclonal Antibodies, Inc.***, 231 U.S.P.Q. 81(Fed. Cir. 1986). See also M.P.E.P. 2164.05 (a).

However applicants have shown how one skilled in the art would obtain motion vector d(t) and reference picture s'(t - 1) according to the prior art method as shown in fig. 1. This prior art method for obtaining the input variables to the claimed method is explained in the background section of the specification.

Thus the relationship between the device of fig. 1 and the filter of fig. 3 is clearly stated in claims 8 and 10 because the output variables of the device of fig. 1 are stated as input variables for the claimed method and device.

Of course the motion compensation 4 of fig. 3 converts past image point information at t - 2 to a motion-compensated picture signal at t - 1. This motion compensation then proceeds according to the motion vector d(t - 1) multiplied by the scanning rate increase factor L. Claims 8 and 10 have been amended to make this aspect of the invention clear. The basis for these changes is found in

the last several lines of page 9 and the first two lines of page 10 of applicants' specification. As observed above the output of the motion estimation unit ME in fig. 1 is d(t), not L*d(t-1). The latter value is the input to the motion compensation 4 of fig. 3.

The invention provides an improved picture signal in which aliasing errors are corrected. The basic assumptions on which the inventive process and device rest as well as an explanation of how aliasing is corrected according to the invention are provided on page 6, line 4 to page 7, line 13. The problem of aliasing is also explained in the references mentioned in the paragraph running from page 3 to page 4 of applicants' specification.

The previous remarks regarding the previous rejection for lack of enablement filed in the amendment dated March 4, 2004 are incorporated by reference. Review of these remarks, which deal with other issues regarding enablement, is respectfully requested.

For the foregoing reasons and because of the changes in the claim wording, withdrawal of the rejection of claims 8 to 12 under 35 U.S.C. 112, first paragraph, for lack of enablement is respectfully requested.

For the foregoing reasons and because of the changes in the claim wording, it is respectfully submitted that none of the new claims 13 to 14 should be rejected under 35 U.S.C. 112, first paragraph, for lack of enablement.

IV. Specification

The detailed description of the invention in the specification on pages 8 to 11 lacked descriptive terminology used in the claims and other parts of the specification for the various pictures, which made it more difficult to understand. Also some minor grammatical and translation errors were present.

Changes have been made in the specification on pages 8 to 11 to correct these deficiencies. No new matter has been entered. Modification of a name of a picture does not introduce new matter.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,

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